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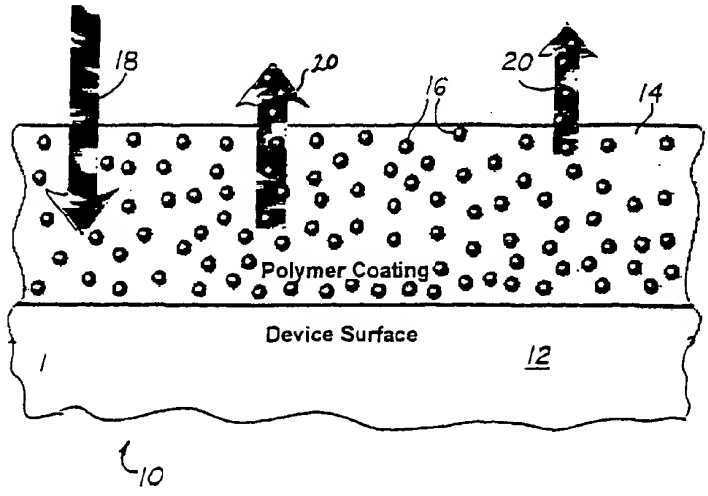
Declarations under Rule 4.17:
— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations*
— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

[Continued on next page]

(54) Title: TARGETED THERAPEUTIC AGENT RELEASE DEVICES AND METHODS OF MAKING AND USING THE SAME



(57) Abstract: Generally, the present invention provides devices and methods for delivering high, efficacious concentrations of therapeutic agents, i.e., medicaments such as drugs, antibiotics, etc., to specific sites in a patient's body, such as tumors and infected lesions. In one aspect of the present invention there are provided devices to accomplish the aforesaid delivery of therapeutic agents and methods to accomplish the delivery by positioning a device in the body using minimally invasive techniques such as, for example, catheterization or via trochar. The devices may contain a carrier substrate and a coating on the substrate. The carrier substrate provides structural integrity to the device and the coating thereon contains at least one layer of polymeric material containing one or more medicaments. Optionally, there may be a non-medicated binder coat between the carrier substrate and the medicated polymer layer. The medicated polymer layer may contain a hydrophilic/hydrophobic polymer composition. See Figure 1.

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THE CLAIMS

What is claimed is:

1. A medicated device comprising:
a scaffold member suitable for implantation at a tumor or other lesion site;
a polymeric coating ("med coat") on the scaffold member; and
at least one therapeutic agent in the med coat at a loading sufficient to provide therapeutic quantities of the therapeutic agent to the site for an extended period of time.

2. The device of claim 1 comprising an anti-cancer therapeutic agent in the med coat.

3. The device of claim 1 comprising at least 5 micrograms (μg) of at least one therapeutic agent per square centimeter of the med coat.

4. The device of claim 3 comprising at least 50 μg of at least one therapeutic agent per square centimeter of the med coat.

5. The device of claim 4 comprising at least 100 μg of at least one therapeutic agent per square centimeter of the med coat.

6. The device of claim 5 comprising at least 500 μg of at least one therapeutic agent per square centimeter of the med coat.

7. The device of claim 1 comprising sufficient quantity of a therapeutic agent to deliver therapeutically effective quantity of a therapeutic agent into tissue in a region of at least one centimeter from the device.

8. The device of claim 7 comprising sufficient quantity of a therapeutic agent to deliver therapeutically effective quantity of a therapeutic agent into tissue in a region of at least two centimeters from the device.

9. The device of any one of claims 1-5 wherein the med coat comprises a hybrid polymeric coating comprising a hydrophilic polymer component and a hydrophobic polymer component.

10. The device of claim 9 wherein the hydrophobic polymer component comprises one or more cellulose ester polymers.

11. The device of claim 1 wherein the polymeric coating comprises an acrylate polymer and PVP/VA copolymer in a weight ratio in the range of from 1.5:1 to 7:1.

12. A medicated device comprising:

a substrate suitable for implantation in a patient's body;

a polymeric coating ("med coat") on the scaffold member; and

at least one therapeutic agent in the med coat at a loading sufficient to provide therapeutic quantities of the therapeutic agent to the patient's tissue in a region in the body extending at least one centimeter from the device.

13. The device of claim 12 comprising sufficient quantity of a therapeutic agent to deliver therapeutically effective quantity of a therapeutic agent into tissue in a region of at least two centimeters from the device.

14. The device of claim 12 or claim 13 comprising a hybrid polymeric coating comprising a major proportion of one or more hydrophilic polymer materials and a minor proportion of one or more cellulose ester polymers.

15. The device of claim 14 wherein the cellulose ester polymer comprises about 3% by weight of the combined weights of the cellulose ester polymer and the hydrophilic polymer materials.

16. The device of claim 14 wherein the cellulose ester polymer comprises nitrocellulose.

17. The device of claim 16 wherein the nitrocellulose comprises about 3% by weight of the combined weights of nitrocellulose and the hydrophilic polymer materials.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/12159

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61F 2/02
US CL : 424/423

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : Please See Continuation Sheet

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
MEDLINE, EMBASE, SCISEARCH, BIOSIS, CAPLUS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	US 6,110,483 A (WHITBOURNE et al.) 29 August 2000 (29.08.2000), see entire document.	1-17
X	US 5,840,329 A (BAI) 24 November 1998 (24.11.1998), see entire document.	1-2, 9-11
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Y		3-8, 12-17
X,P	US 6,231,888 B1 (LERNER et al.) 15 MAY 2001 (05.15.2001), see entire document.	1-2, 9-11
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Y,P		3-8, 12-17
X	US 6,001,386 A (ASHTON et al.) 14 December 1999 (14.12.1999), see entire document.	1-2, 9-11
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Y		3-8, 12-17
X	US 5,294,448 A (RING et al.) 15 March 1994 (15.03.1994), see entire document.	1-2, 9-11
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Y		3-8, 12-17

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer Gailene R. Gabel Telephone No. (703) 308-0196

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C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 4,723,957 A (MAGRUDER et al.) 09 February 1988 (09.02.1988), see entire document.	1-2, 9-11 --- 3-8, 12-17
A	US 5,866,619 A (SINTOV et al.) 02 February 1999 (02.02.1999), see entire document.	1-17
A	US 5,779,673 A (ROTH et al.) 14 July 1998 (14.07.1998), see entire document.	1-17

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International application No.
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Continuation of B. FIELDS SEARCHED Item 1:
424/423, 94.64, 78.24, 78.27, 423, 457, 458, 461, 462, 463, 468, 469, 494, 497; 514/772.1, 772.2, 772.3, 777, 778, 779, 781, 782, 783, 786, 834, 781; 623/1, 3; 604/187, 313, 319; 427/2.3, 569